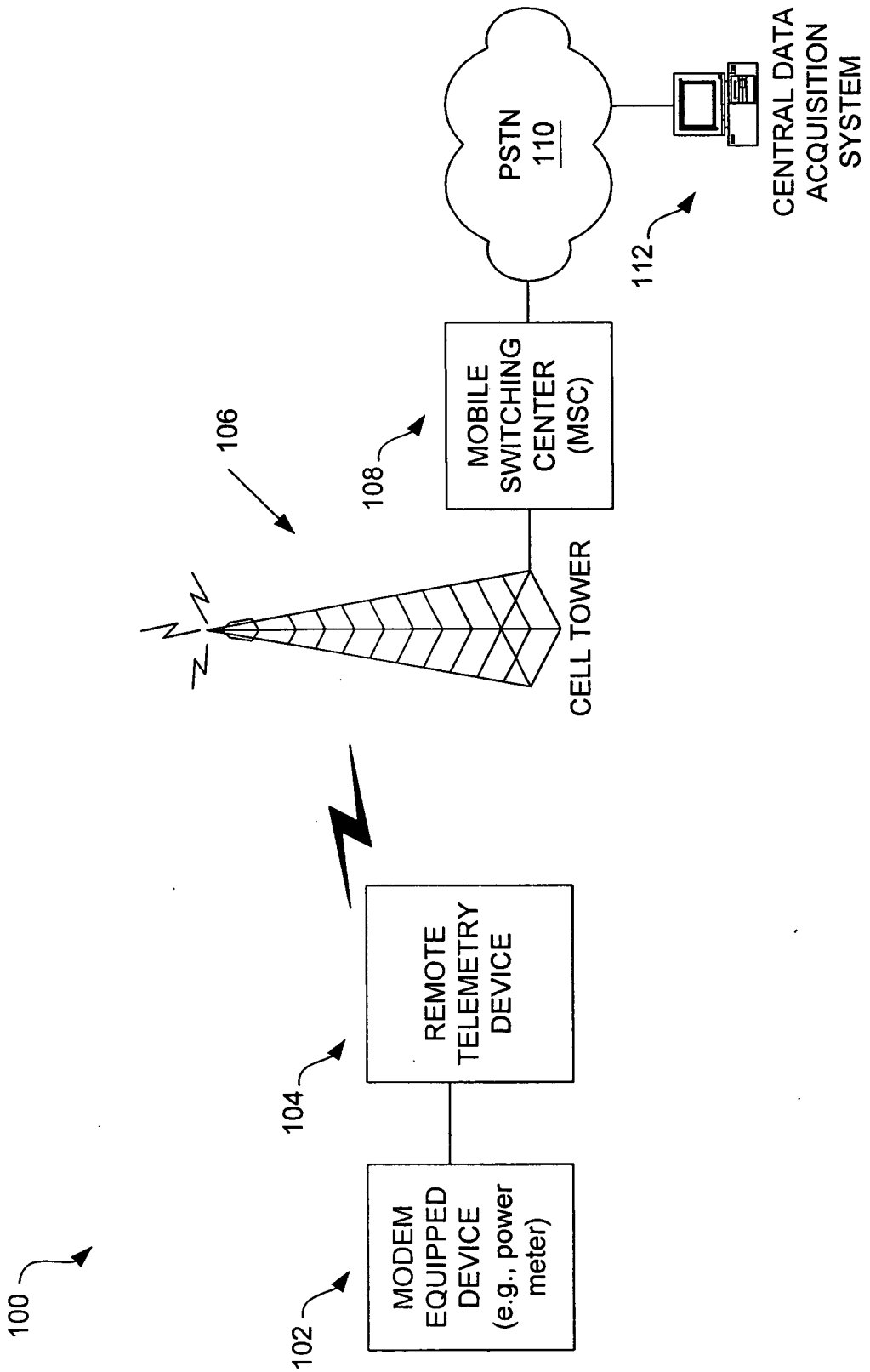
100
MODEM EQUIPPED DEVICE (e.g., power meter)
102
REMOTE TELEMETRY DEVICE
104
106
CELL TOWER
MOBILE SWITCHING CENTER (MSC)
108
PSTN 110
112
CENTRAL DATA ACQUISITION SYSTEM

FIG. 1

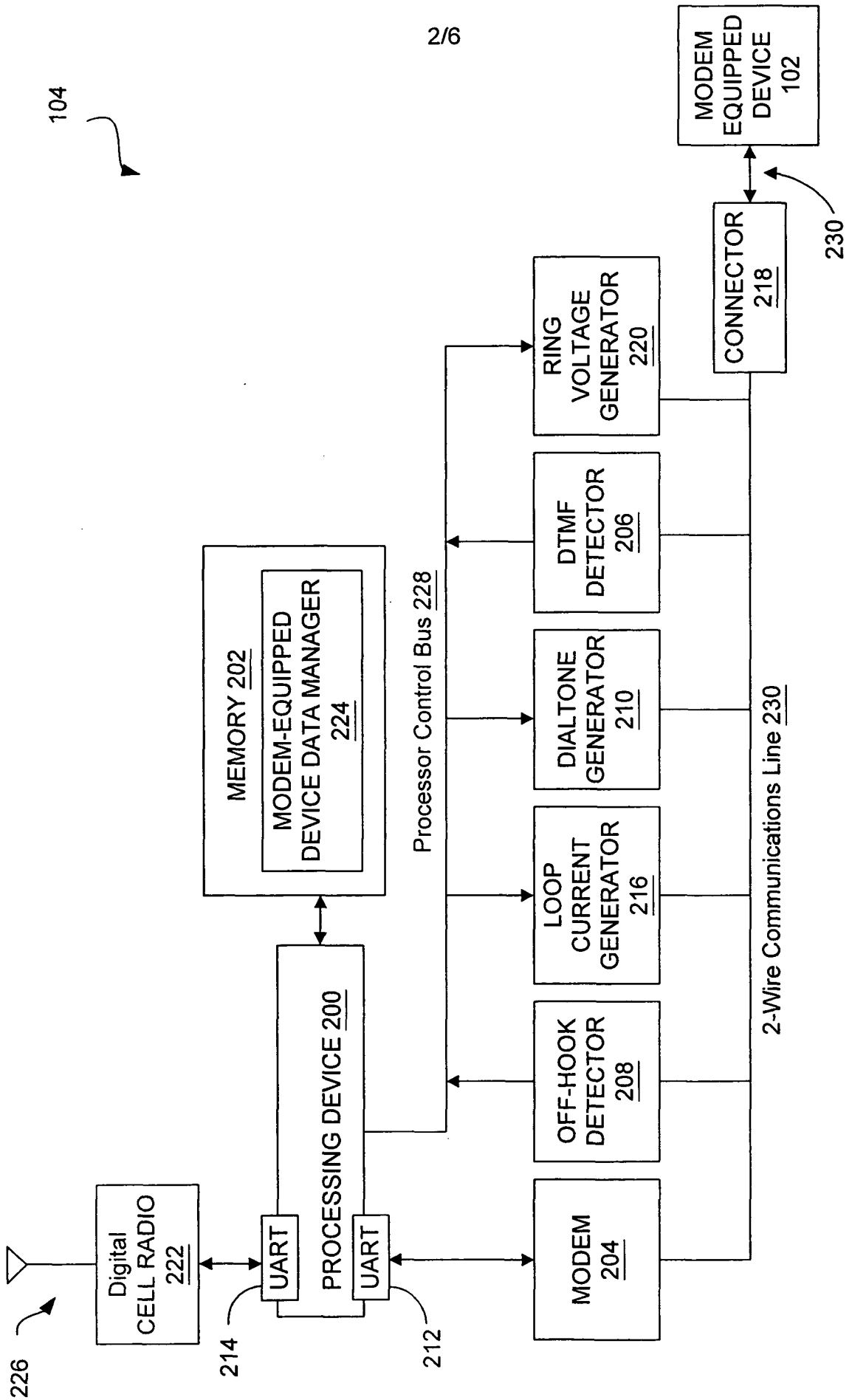
104
MODEM EQUIPPED DEVICE 102
230
CONNECTOR 218
RING VOLTAGE GENERATOR 220
DTMF DETECTOR 206
DIALTONE GENERATOR 210
LOOP CURRENT GENERATOR 216
OFF-HOOK DETECTOR 208
MODEM 204
MEMORY 202
MODEM-EQUIPPED DEVICE DATA MANAGER 224
Processor Control Bus 228
PROCESSING DEVICE 200
UART
UART
Digital CELL RADIO 222
226
214
212
2-Wire Communications Line 230

FIG. 2

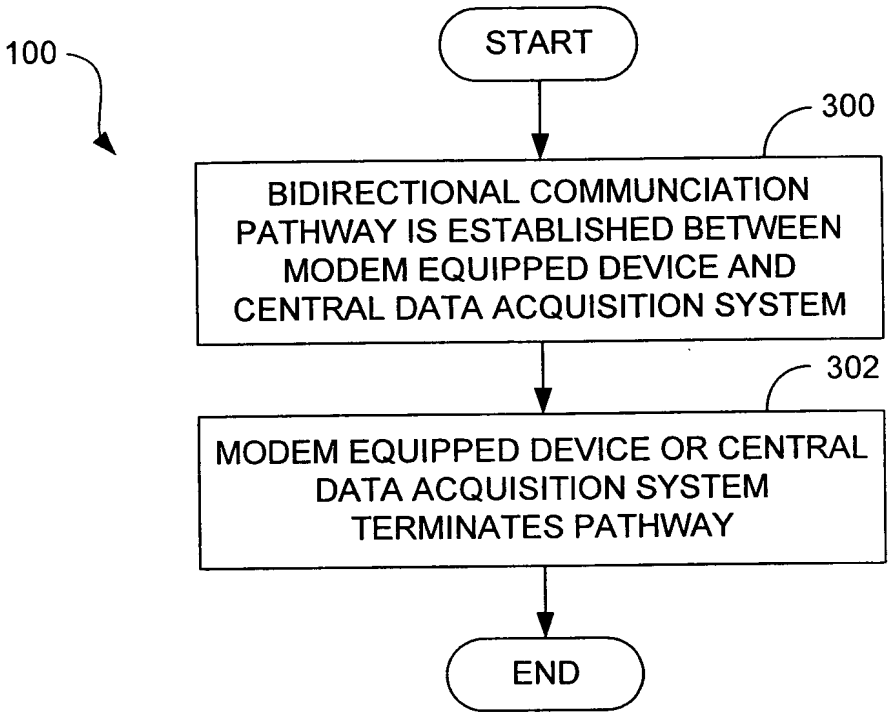
100
START
300
BIDIRECTIONAL COMMUNCIATION PATHWAY IS ESTABLISHED BETWEEN MODEM EQUIPPED DEVICE AND CENTRAL DATA ACQUISITION SYSTEM
302
MODEM EQUIPPED DEVICE OR CENTRAL DATA ACQUISITION SYSTEM TERMINATES PATHWAY
END

FIG. 3

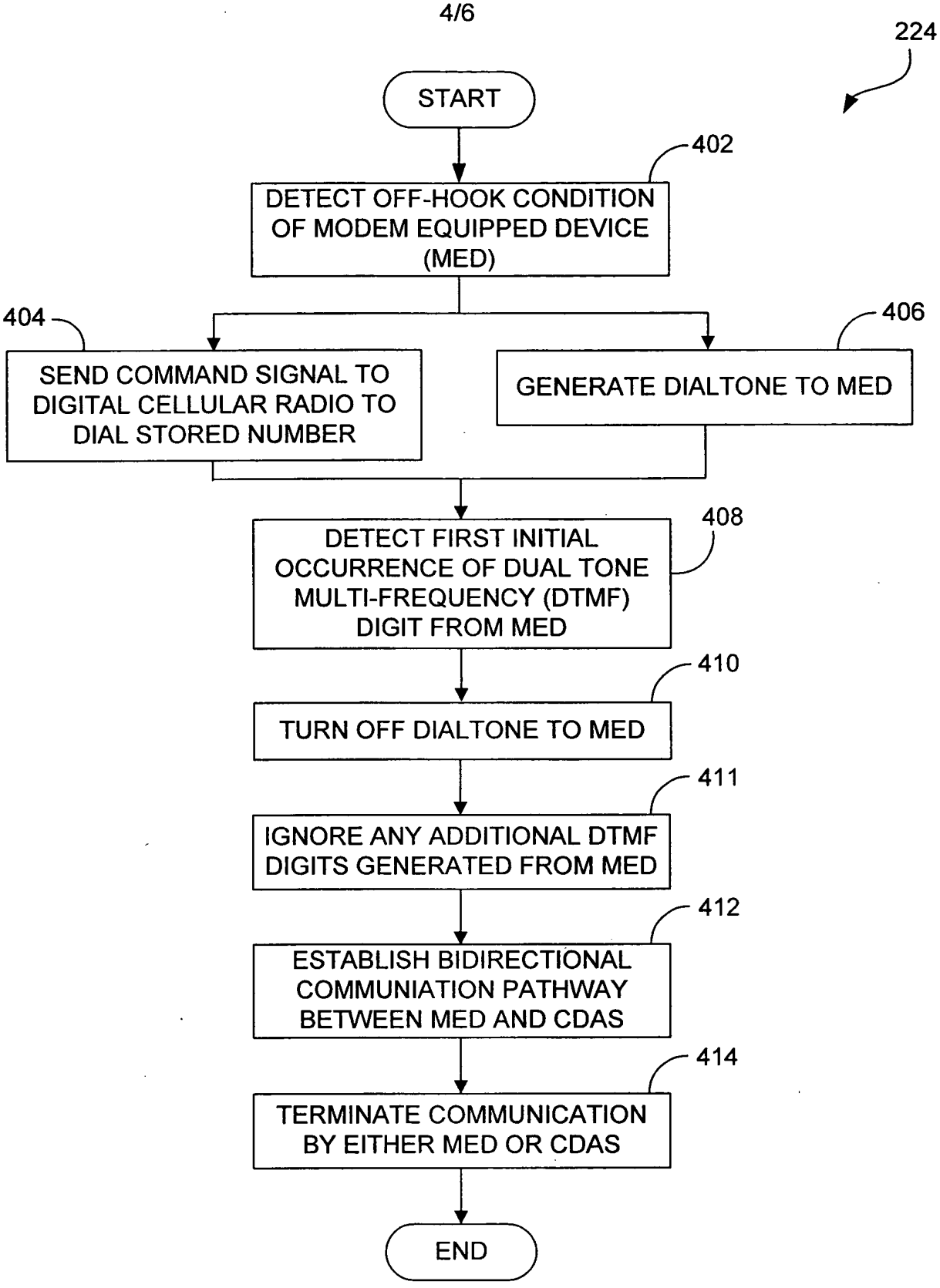
224
START
402
DETECT OFF-HOOK CONDITION OF MODEM EQUIPPED DEVICE (MED)
404
SEND COMMAND SIGNAL TO DIGITAL CELLULAR RADIO TO DIAL STORED NUMBER
406
GENERATE DIALTONE TO MED
408
DETECT FIRST INITIAL OCCURRENCE OF DUAL TONE MULTI-FREQUENCY (DTMF) DIGIT FROM MED
410
TURN OFF DIALTONE TO MED
411
IGNORE ANY ADDITIONAL DTMF DIGITS GENERATED FROM MED
412
ESTABLISH BIDIRECTIONAL COMMUNIATION PATHWAY BETWEEN MED AND CDAS
414
TERMINATE COMMUNICATION BY EITHER MED OR CDAS
END

FIG. 4A

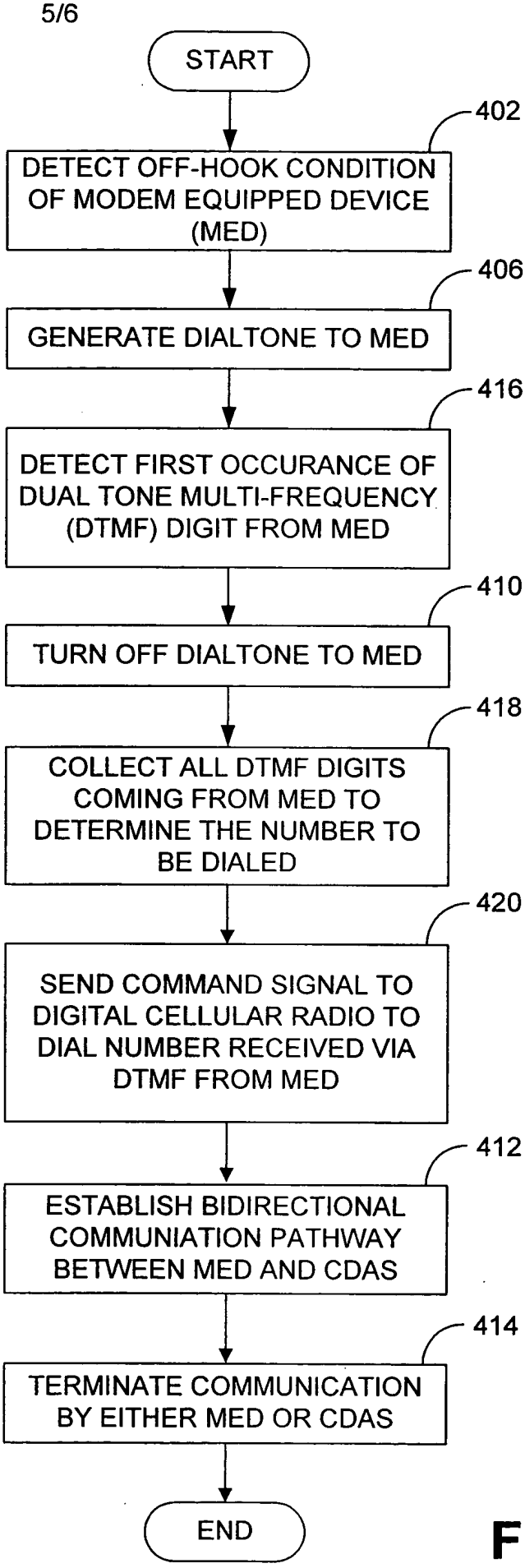
224
START
402
DETECT OFF-HOOK CONDITION OF MODEM EQUIPPED DEVICE (MED)
406
GENERATE DIALTONE TO MED
416
DETECT FIRST OCCURANCE OF DUAL TONE MULTI-FREQUENCY (DTMF) DIGIT FROM MED
410
TURN OFF DIALTONE TO MED
418
COLLECT ALL DTMF DIGITS COMING FROM MED TO DETERMINE THE NUMBER TO BE DIALED
420
SEND COMMAND SIGNAL TO DIGITAL CELLULAR RADIO TO DIAL NUMBER RECEIVED VIA DTMF FROM MED
412
ESTABLISH BIDIRECTIONAL COMMUNIATION PATHWAY BETWEEN MED AND CDAS
414
TERMINATE COMMUNICATION BY EITHER MED OR CDAS
END

FIG. 4B

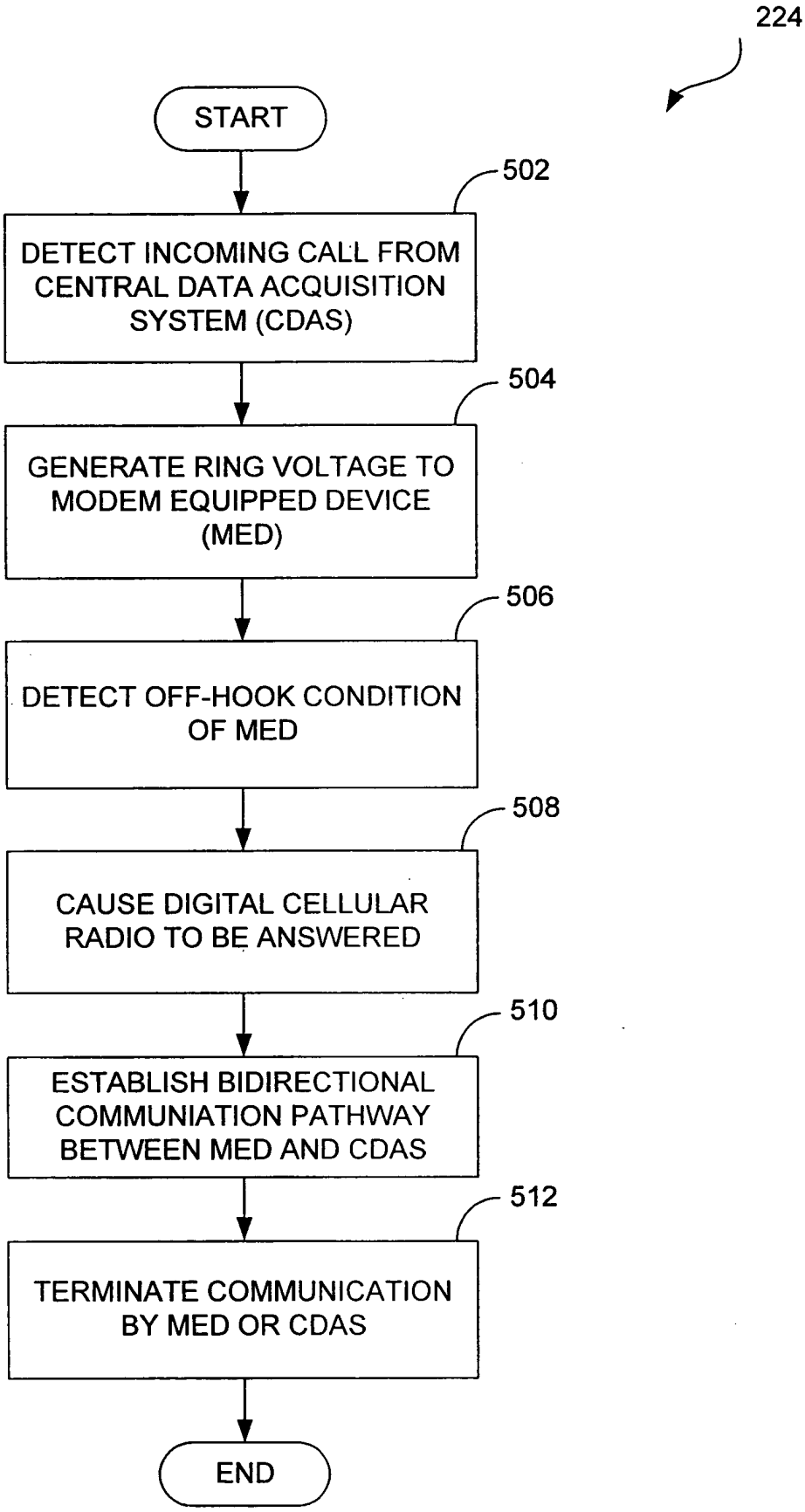
224
START
502
DETECT INCOMING CALL FROM CENTRAL DATA ACQUISITION SYSTEM (CDAS)
504
GENERATE RING VOLTAGE TO MODEM EQUIPPED DEVICE (MED)
506
DETECT OFF-HOOK CONDITION OF MED
508
CAUSE DIGITAL CELLULAR RADIO TO BE ANSWERED
510
ESTABLISH BIDIRECTIONAL COMMUNIATION PATHWAY BETWEEN MED AND CDAS
512
TERMINATE COMMUNICATION BY MED OR CDAS
END

FIG. 5